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DISEASES OF THE NERVOUS SYSTEM

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DISEASES of the NERVOUS SYSTEM

(PUBLISHED MONTHLY)

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

EDITORIAL COMMENT

Psychiatry in the National Emergency

Each day the right to live as a free people in the United States is threatened by external forces. The reaction to this force has been an intensive mobilization of man power and of industry. To function in the most efficient manner for an eventual victory, it is necessary to provide for good health and improve the morale in both civilian and armed populations. The entire medical profession has a duty to fulfill and is contributing wholeheartedly. Psychiatry has an individual mission in the present emergency.

The last war taught the value of emotional stability in the individuals of the armed forces, and the government wishes to avoid repetition of certain expensive errors. Thousands of men were discovered with mental and nervous disorders shortly after induction. The cost of their care did not cease with the discharge from service, nor has it terminated to date. The consultant for the U. S. Veterans Bureau estimates that one-half of the beds in veterans' hospitals are occupied by patients with these illnesses, and many more receive partial or full disability compensation. The additional loss in efficiency and morale could not be measured by dollars alone.

Something must be done to "screen" prospective soldiers and sailors as the inactivity and lack of emotional stimulus in the one year training period is particularly conducive to developing mental and nervous illness. Should war come the added stress of mechanized warfare will extract a greater toll. Approximately 95 per cent of the soldiers in World War I with psychiatric illnesses had personality deficiencies existing before induction; thus the illnesses were not service connected.

Prior to the passage of the Selective Service Act, the War Department already had prepared to utilize the resources of American Psychiatry. Various agencies and committees began to work on remedial measures. Some of their accomplishments were reported at the recent meeting of the American Psychiatric Association in Richmond, Virginia. A symposium on Military and Industrial Mobilization was conducted under the joint auspices of the Surgeons General of the Army and Navy, the Director of Selective Service System, the Administrator of Veterans Affairs, the Administrator of the Federal Security Agency, the National Research Council and the American Psychiatric Association Committee on Military Mobilization.

Of special interest was the recommendation to study the personality attainments of selectees before going up for induction. The first objective is to prevent the induction of men who will "break" under discipline and the forced association with others which exists in military life. Secondly, the rejected man will not resign his job, the stigma of failure is spared him, and, more important, he can continue as an asset to production in a civilian capacity. Emphasis was placed on the knowledge that many temperaments are unsuited to life in the armed forces.

Methods to discover the maladjusted personalities were taken under advisement, and it was thought that the local board was in an ideal position to begin this "screening". The local board has access to considerable information about the selectee, and the mem-

(Continued to page 206)

Massive Cerebral Hemorrhage

JULIUS SCHREIBER, M.D.*
Stockton, California

Dr. Schreiber received his Doctor of Medicine degree from the College of Medicine, of the University of Cincinnati in 1933. Following his internship, he spent a short period of time doing post-graduate studies in tuberculosis, particularly its psychosomatic aspects, at the JCRS Hospital in Denver, Colorado. In 1936 he joined the staff of the Stockton State Hospital, as Neuro-psychiatrist. Since becoming a member of the staff of that hospital he has done post-graduate work in clinical Neurology and Neuropathology both in San Francisco and New York. He is presently in charge of the clinical and research work in Insulin and Metrazol shock therapy at the Stockton State Hospital.

The pathogenesis of massive cerebral hemorrhage is still under discussion. The several views which have been held with regard to this condition have until quite recently proved inadequate. Globus (1927), in common with others, rejecting Charcot but accepting in part the idea of Rouchoux, developed and later (1937) elaborated a concept of the dynamics of apoplectic hemorrhage. He takes into account the antecedent events. Before reviewing some of the older views and presenting the concept of Globus, it will be of advantage to re-define the term massive cerebral hemorrhage.

Massive cerebral hemorrhage is one of several conditions which come under the general heading of Intracranial Hemorrhage. It is a term which should be applied specifically to bleeding occurring in the brain substance. The hemorrhage is usually precipitate in origin and explosive in character, resulting in an extravasation of a large mass of blood into an area of brain tissue. The term, however, is frequently incorrectly used to designate other vascular lesions in the brain which may also be sudden in development and have an apoplectic character, but in which the lesion is that of softening by thrombosis or cerebral embolism.

According to Globus[1] this misuse of the term is responsible for the erroneous belief that massive cerebral hemorrhage is often followed by recovery. The cases of so-called recovery from massive cerebral hemorrhage are most likely cases of either cerebral thrombosis or angiospastic states. The clinical manifestations of these conditions are, in the early stages, almost indistinguishable from those in massive cerebral hemorrhage.

Almost one hundred years ago, Rouchoux popularized the concept of "prehemorrhagic brain softening." It was his opinion that cerebral hemorrhage was always preceeded by a gradual and clinically unrecognized alteration of brain substance, resulting in a reduction of its cohesive properties. This softer consistency of the surrounding tissue, he believed, made for the rupture of the cerebral blood vessels. This view was accepted in full or with modifications by many of his contemporaries. Some thirty years later, Charcot and Bouchard[2] opposed the concept of a preexisting area of softening on the grounds that there was not sufficient proof to support the idea. They ascribed the cause of cerebral hemorrhage to the bursting of small aneurysms of intracerebral vessels. Later Hasse found that these aneurysms were not primary vascular defects but were secondary manifestations of diseased blood vessels. It was then the consensus of opinion that these small sacular enlargements were "false aneurysms" whose rupture caused the cerebral hemorrhage.

Gradually the "pre-hemorrhagic stage of softening" idea of Rouchoux gained new adherents. Westphal[3] contended that angiospasm, recurring or continuing over a period of time led to the formation of zones of softening. When the spasm wore off, the vessel re-opened and was subjected to the pressure of returned blood, but being no longer supported by normal firm brain tissue gave way and resulted in hemorrhage. Others have since contributed their views on the pathogenesis of apoplectic hemorrhage, but the theory advanced by Globus[4] explains more fully than any that have preceeded his work, the actual chain of events.

According to Globus "massive, spontaneous cerebral hemorrhage is a terminal phase in a chain of events and has its origin in a more or less diffuse disease of the cerebral blood vessels." He finds that this condition is com-

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monly associated with generalized arteriosclerosis, hypertrophy of the heart, advanced disease changes in the kidneys, and hypertension. Further, the onset in these patients is precipitate, although many have given histories of previous attacks, these attacks antedating the final illness by periods of three days to four weeks. He emphasizes the point that "in the cases showing previous paralysis the fatal hemorrhage occurred in an area of the brain localized clinically as responsible for the symptoms." In none of his cases was there a history of trauma to the head or any other form of violent action which could be regarded as contributing to the cerebral hemorrhage.

The conception of the chain of events which lead to massive cerebral hemorrhage is as follows:

(1) The primary process is a degeneration of one or more cerebral blood vessels, resulting in a gradual closing of the selected vessel.

(2) The area of brain tissue supplied by the vessel slowly but progressively becomes disorganized. It is an area of softening and assumes the character of a potential cavity. Such an area may preceed by hours, days, months, or even years the actual hemorrhage.

(3) The vessels traversing this area of softening, while at first patent and functioning, since they are no longer surrounded by normal brain tissue and affected by the disturbed circulation, undergo degenerative changes.

(4) This process is a dynamic one and the necrobiosis of tissue and vessels goes on apace.

(5) At the same time that we have this picture of disintegrated though patent vessels in an area of softening, the hypertension is unrelieved, if not advanced.

(6) The vessels give way at some point in their course through this area of brain softening.

(7) If the patient dies within a few hours, blood may not be found either in the ventricles or the subarachnoid space.

(8) More commonly, since but a narrow rim of softened and readily yielding brain tissue separates the hemorrhagic cavity from an adjoining ventricle or the overlying subarachnoid space, the pressure of the accumulating blood breaks through a defect in this rim of tissue and floods either the ventricles, or the subarachnoid space, or through two defects, into both.

The above anatomical and physiological events are illustrated by the following two cases:

Case I

A woman, fifty years of age, was admitted to the Mount Sinai Hospital on April 28, 1939. She had been found lying fully dressed and unconscious on the floor of her hotel room, eight hours after the time she usually left for work. One hour later, she appeared to have regained consciousness and opened her eyes but did not speak. She was then brought to the hospital. There it was learned from her sister that during the previous eight years she had been known to have mild hypertension and had occasional swelling of both ankles. She had undergone an hysterectomy eight years before admission. During the six months preceding her sudden illness she was found to be "nervous" and was subject to occasional flushes. This was attributed to the onset of the menopause, for her menses ceased at about that time. She was known to be left-handed.

Examination—The patient who was well-developed and obese, lay very quietly in bed, with her eyes closed. Her respirations were noisy but regular. The pulse rate was 68 per minute. The blood pressure was 140 systolic and 80 diastolic. She yawned frequently. Occasionally she would open her eyes and the eye-balls would roll at random, from side-to-side. At times, she would display "groping" movements of the right arm and leg. She did not speak but occasionally, in response to commands, she would show her teeth and raise her right arm. The right pupil was larger than the left and was slightly irregular. Both pupils reacted promptly to light. The retinal arteries were narrowed and somewhat tortuous. There was a left, central facial paresis. The left upper limb was held in adduction and flexion. It was spastic. The left lower limb was flaccid, while the right lower was spastic. The deep tendon reflexes were increased in the left upper extremity and diminished in both lower extremities. The Hoffman and Babinski signs were elicited on both sides, with the Babinski being more marked on the left side. The abdominal reflexes were absent. Both right extremities responded to pin prick. Except for pitting

edema on the dorsum of each foot there were no other general physical findings of significance.

Laboratory Data — Cerebrospinal fluid: Grossly bloody with slight xanthochromia of the supernatant fluid; initial pressure, 110 mm. of water; cells, 3000 well-preserved red blood cells per cu. mm.; Pandy, four plus. Blood: white blood cells, 15,600 per cu. mm.; hemoglobin, 96 per cent. Urinalysis: negative.

Course—A diagnosis of hemorrhage with focal damage in the right cerebral hemisphere was made. Whether it was essentially subarachnoid or intracerebral with oozing into the subarachnoid space was not agreed upon. The possibility of a ruptured aneurysm was considered.

During the patient's stay in the hospital, neck rigidity developed. The pupils became constricted. The cerebrospinal fluid pressure increased to 180 mm. of water but the composition of the fluid remained essentially unchanged. Her somnolence persisted. The fact that the patient could be roused suggested that her condition was one of deep drowsiness rather than stupor and hence, at one time, a hypothalamic lesion was suggested. A few days after admission her temperature rose rapidly, accompanied by an increase in pulse and respiratory rates. On her eighth day in the hospital she developed pneumonia, and from then on she declined more rapidly, dying fifteen days after her admission to the hospital.

Necropsy Findings—Brain. Gross: Fluid and clotted blood filled the subarachnoid space over the occipital lobes and the dorsolateral surface of the parietal lobes. The vessels at the base of the brain displayed slight sclerotic changes. On sectioning the brain, an hemorrhagic area was found overlying almost its entire length of the corpus callosum. The underlying corpus callosum was very soft; it was grayish pink in color and friable. Near the anterior horn of the right lateral ventricle, close to its lateral wing, there was a defect in the corpus callosum which brought this hemorrhagic area into continuity with the underlying lateral ventricle. This defect extended caudally for almost the entire length of the corpus callosum. Both lateral ventricles were somewhat enlarged, the right more than the left, and were filled with recently coagulated blood. The third ventricle contained a small amount of blood but the aqueduct and the fourth ventricle were free of blood. (Fig. 1).

Microscopic Anatomy — Serial sections of the corpus callosum were stained with hemotoxylin-eosin, and by the Nissl, Cajal, Mallory, Van Gieson, and Weil methods.

A myelin (Weil) preparation (Fig. 2) shows

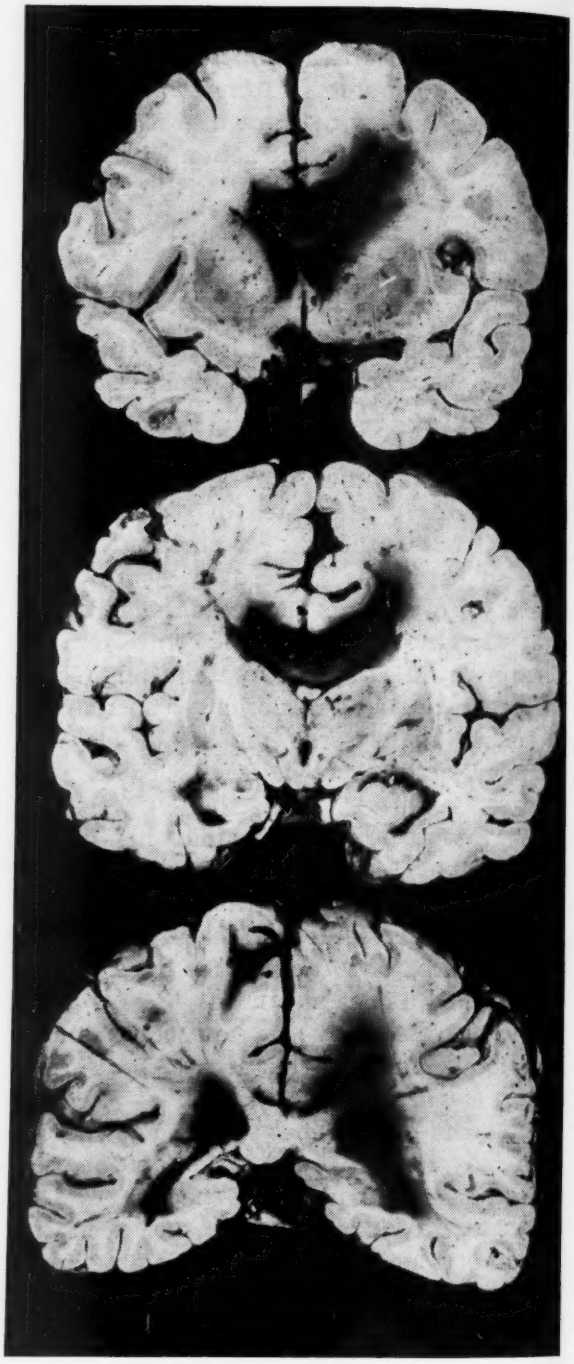

FIGURE 1 (Case 1)

Massive hemorrhage overlying the corpus callosum and emptying into the underlying right ventricle.

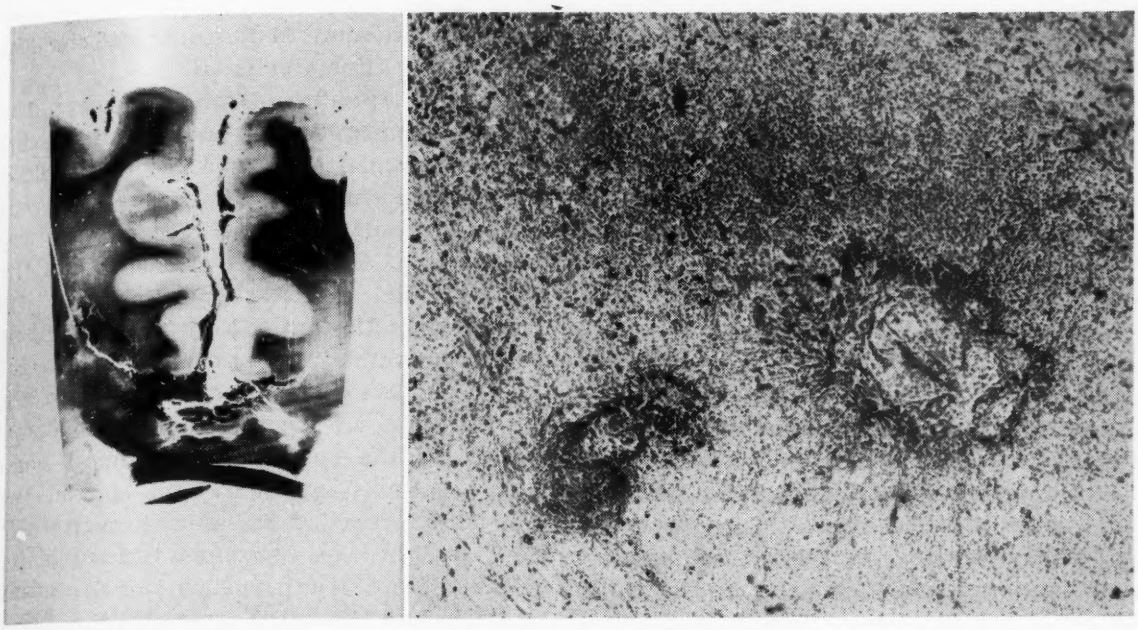

FIGURE 2 (Case 1) A Weil preparation showing clearly the break in the corpus callosum together with softening and demyelinization. x-1. FIGURE 3 (Case 1) Two vessels, traversing the hemorrhagic area, with practically complete dissolution (necrosis) of their walls. x-100.

clearly the break in the corpus callosum as well as softening and demyelinization in that area. It also shows extravasated blood in the longitudinal fissure and in the adjacent brain tissue.

In hemotoxylin-eosin, Mallory, and Van Gieson preparations, there are noted wide areas consisting of disintegrated brain tissue, free of extravasated blood elements, and also an area composed of a mixture of softened brain tissue, partially organized blood, and free blood elements. In this hemorrhagic area there are two blood vessels (Fig. 3) with practically complete dissolution (necrosis) of their walls. Such vessels are probably responsible for the hemorrhage. Other vessels, ranging from those with partial mural changes (Fig. 4) to those with fairly intact walls (Fig. 5) are seen traversing the hemorrhagic area.

In the zone surrounding the hemorrhagic area many congested blood vessels in various stages of arteriosclerotic change are observed. There is also wide-spread degeneration and rarefaction. Cajal stains show a diffuse gliosis.

The meninges in the longitudinal fissure are thickened, distended and filled with free and partly coagulated blood. The meningeal vessels are congested and their walls are thickened. The nerve cells in the cortex are

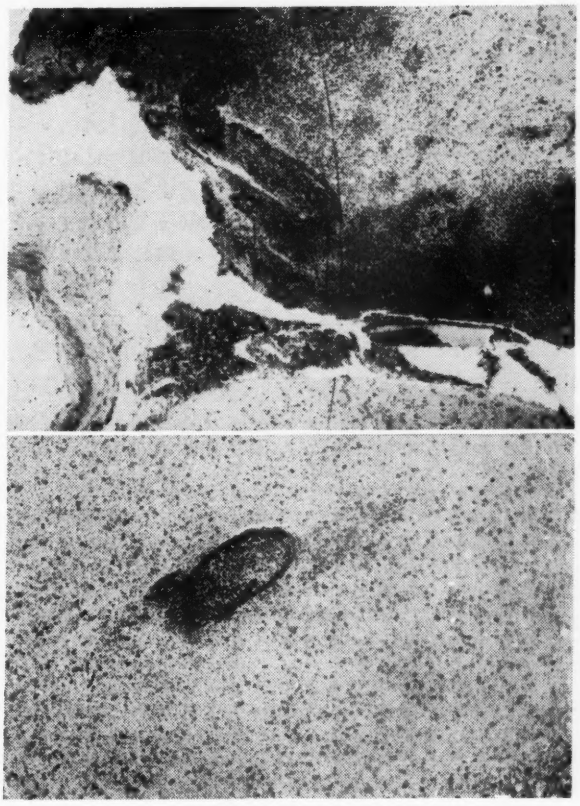

FIGURE 4 (Case 1)

Vessel with partially damaged walls traversing the hemorrhagic area. x-58.

FIGURE 5 (Case 1)

Vessel with intact walls traversing the hemorrhagic area. x-90.

fairly well preserved in some areas, but in other areas they are swollen and in many the nuclei have shifted to the periphery of the cell. The perineuronal spaces are increased in size. In the subcortex there is a diffuse increase in glial nuclei. The blood vessels, both in the cortex and subcortex, are congested and the peri-vascular spaces are enlarged. There is considerable peri-vascular mobilization of glia.

Case II

The patient, a colored woman, aged forty-two, was subject to an occasional bitemporal headache and nose bleed. She became acutely ill on January 3, 1940, at about 5 a. m. One hour earlier, she had arisen to prepare for a trip. While dressing, her left hand became numb, and a severe headache in the right temporal area developed. Shortly thereafter, she was brought to the Mount Sinai Hospital, where on arriving she began to vomit. The headache became more intense and she was unable to move her left arm and leg. Her speech was slow and slurred. A few minutes later she became stuporous.

Examination—The patient was well-developed and well-nourished. Her pulse rate was 68; blood pressure was 168 systolic and 110 diastolic. Her eyes tended to deviate to the right. The pupils were contracted but reacted to light. The fundi showed marked retinal arteriosclerosis. There was a suggestive left central facial paresis. The right arm was spastic; the left appeared somewhat flaccid. The left leg was everted and very cold. The deep reflexes were present, except for those in the left lower extremity. There was a left Hoffman sign, but no other pathological reflexes. A sensory examination could not be carried out. The heart was enlarged to the left.

Laboratory Data—A lumbar puncture revealed bloody cerebrospinal fluid under increased pressure (240 mm. of water). Urinalysis was negative except for a large amount of sugar (qualitatively). A blood count showed 24,900 white blood cells per cu. mm. with 86 per cent polymorphonuclear cells. The blood Wasserman test was negative.

Course—Fifty per cent glucose solution was administered intraveneously and a retention enema of magnesium sulphate was given. Her condition declined rapidly, Cheyne-Stokes respiration set in; the blood pressure rose to 280 systolic and 130 diastolic; and she died seven hours after admission.

Necropsy Findings—Gross Anatomy: The cerebral hemispheres were uniformly increased in consistency. The superficial blood vessels were engorged. There was dark reddish fluid and coagulated blood in the cisterna magna. The vessels at the base of the brain showed arteriosclerotic changes. On sectioning of the brain, a large hemorrhagic area was found in the region of the right thalamus. It extended posteriorly into the the midbrain on the same side. The dorsal surface of the thalamus was almost completely replaced by blood and showed two wide defects forming channels through which blood within the thalamus communicated with blood in the adjacent part of the lateral ventricle and the third ventricle (Fig. 6).

Microscopic Anatomy—Serial sections of the thalamus and the midbrain were stained with hemotoxylin-eosin, and by the Mallory, Van Gieson, Weil, and Nissl methods.

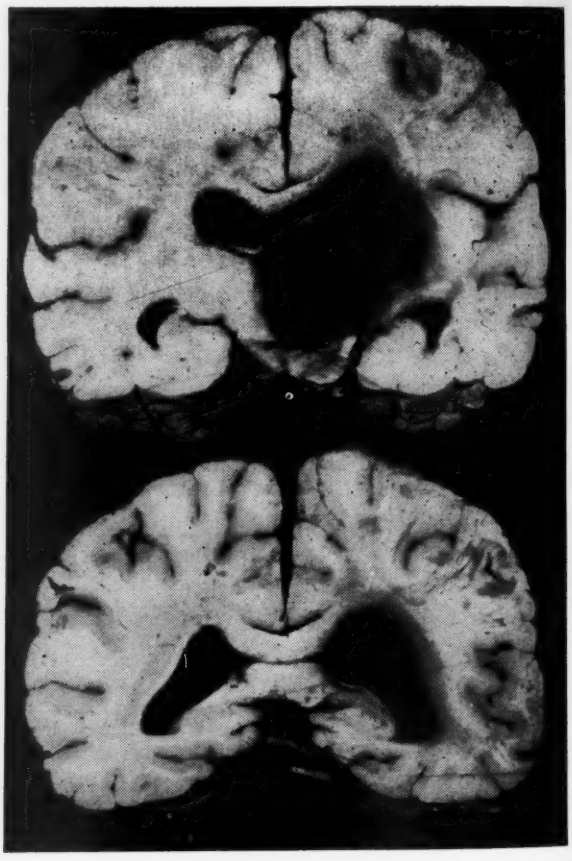

FIGURE 6 (Case 2)
Massive hemorrhage in region of right thalamus, communicating through defects with the adjacent right lateral and third ventricles.

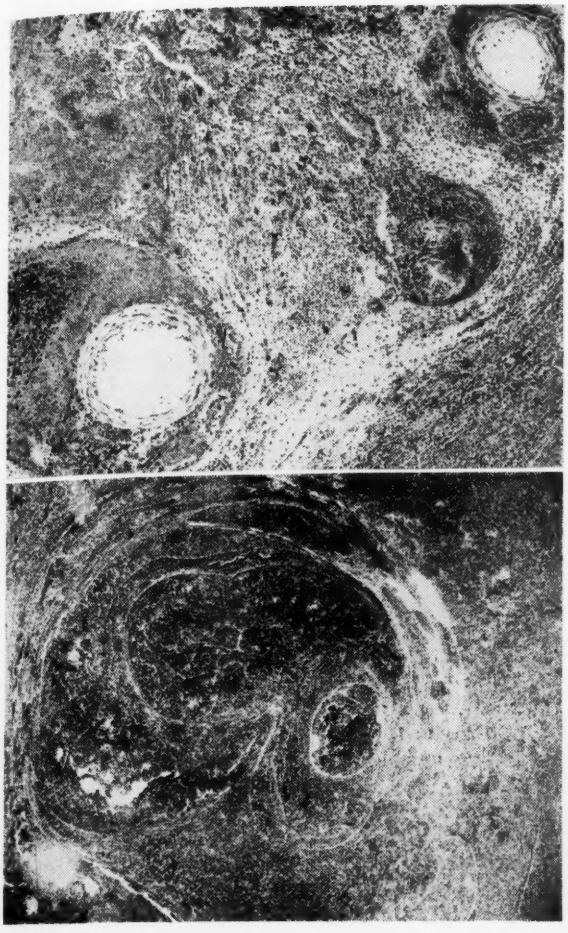

FIGURE 7 (Case 2)

Intact arteriosclerotic vessels traversing the hemorrhagic area. x-75.

FIGURE 8 (Case 2)

A thrombosed re-canalized vessel traversing the hemorrhagic area. x-25.

In sections of the thalamus there is seen a large hemorrhagic area composed of a mixture of free and partly coagulated blood and disintegrated brain tissue. The blood vessels traversing this hemorrhagic area vary from those with intact, thickened walls (Fig. 7), to others in various stages of disintegration. Traversing this same area there is found a thrombosed, recanalized vessel (Fig. 8), attesting the presence of long-standing disease of cerebral vessels accompanied by softening of neighboring brain tissue. Nearby, also traversing this same hemorrhagic area, there is seen a thrombosed, disintegrated, dissecting aneurysm (Fig. 9). Vessels such as these probably account for the hemorrhage.

In the zone surrounding the hemorrhagic area there is wide-spread rarefaction and degeneration. Many congested blood vessels in various stages of arteriosclerotic change are seen.

Sections of the midbrain (Fig. 10) show that the hemorrhagic area, which was observed in the gross examination to have extended caudally from the thalamus, has broken through a defect in the wall of the aqueduct and thereby brought the aqueduct into communication with the hemorrhagic area.

The meninges are thickened, and contain a small amount of free blood. The meningeal vessels are congested and their walls are thickened. Many of the nerve cells are swollen and their nuclei have shifted to the periphery of the cell. The perineuronal spaces are widened.

In the subcortex there is a diffuse increase in the glial nuclei. The blood vessels, both

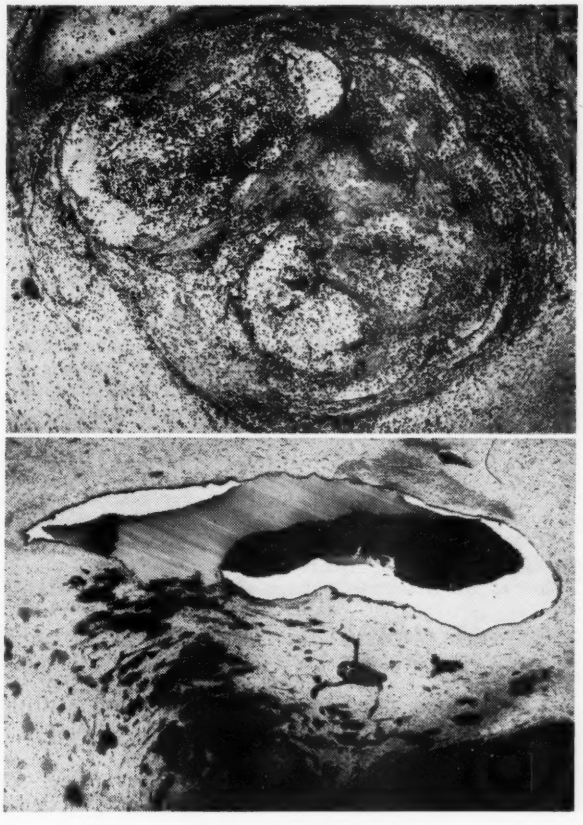

FIGURE 9 (Case 2)

A thrombosed, disintegrated, dissecting aneurysm traversing the hemorrhagic area. x-47.

FIGURE 10 (Case 2)

Section of midbrain showing the hemorrhage breaking through a defect in the wall of the aqueduct. x-25.

in the cortex and subcortex are congested and the perivascular spaces are enlarged. There is a moderate perivascular mobilization of glia.

Summary

The older views regarding the underlying pathology of massive cerebral hemorrhage do not adequately explain the phenomena observed. The concept of Globus, which takes into account the antecedent events, explains most satisfactorily the dynamics of this condition. Globus' theory is given in detail and two cases, which well illustrate the points developed, are presented.

Stockton State Hospital.

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An Evaluation of Insulin Shock Therapy*

EDWARD N. HINKO, M.D. *and* RUDOLF LEISER, M.D.
Eloise, Michigan

Dr. Edward N. Hinko, received his Doctor of Medicine degree from Loyola University, Chicago, in 1936. Following an internship at the William J. Seymour Hospital, Eloise, Michigan, he was appointed Resident in Psychiatry at Eloise Hospital. In 1937 he was appointed Assistant Psychiatrist and in December, 1940, Associate Psychiatrist. Dr. Hinko has taken graduate work in Neuropsychiatry at the University of Michigan and he is a member of the Michigan Society of Neurology and Psychiatry and of the American Psychiatric Association.

Dr. Rudolf Leiser received his Doctor of Medicine degree from the University of Breslau in 1927. Following an internship at the Medical University Hospital of Breslau he was appointed Assistant Physician in the Medical Department of University Hospital of Breslau (Wenzel Hancke) 1928-1933. He was appointed Assistant Physician in the Medical and Research Departments of Michael Reese Hospital, Chicago, Illinois, 1933-1935. He was on the medical staff of Nix Hospital, Santa Rosa Hospital, and Medical and Surgical Hospital, in San Antonio, Texas, 1935-1936. He was given a Research Fellowship in the Medical Department of the William J. Seymour Hospital, Eloise, Michigan from January, 1936-June, 1938. On June 15, 1938, he was appointed Assistant Psychiatrist in the Psychiatric Department of Eloise Hospital. He is Associate Member of the American Psychiatric Association, Michigan Society of Neurology and Psychiatry, and a Fellow of the American College of Physicians.

A review of the recent literature pertaining to the insulin shock therapy of schizophrenia indicates that the early enthusiastic claims made in various parts of the country have yielded to a more conservative evaluation of the treatment.

In evaluating the therapeutic effectiveness of the insulin shock therapy, it would be necessary to compare the results of insulin shock treatment with untreated control cases of equal number, sex, and duration of psychoses, representing similar clinical conditions. These requirements were impossible to fulfill adequately; consequently, 119 male schizophrenic patients admitted to the Eloise Hospital during a 12-month period, ending one year prior to the institution of the insulin and metrazol shock therapies at this hospital, were used for comparison. We attempted thereby to obviate the undesirable feature of employing as a control group patients who had been rejected for either insulin or metrazol shock therapy.

In calculating duration of psychoses, the onset was dated from the appearance of definite psychotic features or clear-cut personality changes, disregarding long standing abnormal personality traits which are so often found in the pre-psychotic history of schizophrenics. In the control group the average duration of illness was 1 year, 5 months. In the treated group it was 2 years, and 6 months.

It has been shown by comparison with other groups that cases with a duration of illness of one year or less stand a far better chance for complete remission. Nevertheless, treatment was often given because of the insistence of relatives, even though many of these cases were known to have an illness of many years duration.

* Read at a Meeting of the Michigan Society of Neurology and Psychiatry, Eloise, Michigan, January 16, 1941.

CONTROL GROUP

Male patients admitted prior to institution of insulin shock

Admitted	*Paroled*
119	25 - 21%

The first table shows that in the control group 25 of 119 patients or 21 per cent were paroled from the hospital.

INSULIN SHOCK TREATMENT

Preliminary Report
Female Patients

Treated	*Paroled*
20	7 - 35%

Present Report
52 Male — 86 Female Patients

Treated	*Paroled*
138	68 - 48.5%

Patients treated from September 1937 to October 1940 inclusive.

In the second table it will be noticed that in the first group of 20 female chronic schizophrenics treated, seven, or 35 per cent, were paroled. Of all the patients treated, 68 of 138, or 48.5 per cent, were paroled from the hospital.

Table three represents a tabulation of patients treated with Insulin Shock, arranged in order of duration of illness. It will be noticed that 27 had an illness whose duration was less than one year, 64 were ill from one to three years, and 47 were ill for periods longer than 3 years. In the group ill less than one year, 18 were classified as social recovery, 3 greatly improved, and 2 unimproved. 25 or 92.5 per cent derived benefit from the treatment. In the next group there were 23 social recoveries, 9 were greatly improved, 25 improved, and 8 unimproved. 56 of 64, or 87.6 per cent derived benefit from the treatment. There were 5 social recoveries from the group whose duration of illness was greater than three years, 7 were greatly improved,

INSULIN SHOCK TREATMENT

52 Male — 86 Female Patients

Duration of Illness	*Number*	*Soc. Rec.*	*Greatly Imp.*	*Improved*	*Un-improved*	*Total Benefited*	*Not Benefited*
Less than 1 yr.	27	18	3	4	2	25 — 92.5%	2 — 7.5%
1 to 3 yrs.	64	23	9	25	8	56 — 87.6%	8 — 12.4%
Over 3 yrs.	47	5	7	21	13	34 — 72.3%	13 — 27.7%
Totals	138	46	19	50	23	115 — 83.3%	23 — 16.7%

Average duration of Psychoses—2 yrs., 6 mos.

INSULIN SHOCK TREATMENT

PAROLED AND RELAPSED PATIENTS

				Duration of Parole						
				Patients on Parole					*Patients—Relapsed*	
Duration of Illness	*Number*	*Paroled*		*Less than 6 mos.*	*6 mos to 1 yr.*	*1 yr. to 2 yrs.*	*Over 2 yrs.*	*Relapsed*		
		No.	*%*					*No.*	*%*	*Less than 6 mos.*	*6 mos. to 1 yr.*	*1 yr. to 1½ yrs.*
Less than 1 yr.	27	20	74	1	9	6	0	4	20	2	2	0
1 to 3 yrs.	64	35	54.6	14	4	3	1	13	37	6	3	4
Over 3 yrs.	47	13	27.6	1	2	5	1	4	32.5	3	1	0
Totals	138	68	48.5	16	15	14	2	21	30.8	11	6	4

21 were improved, and 13 unimproved. 34 of 47, or 72.3 per cent, derived benefit from the treatment. Of a total of 138 patients treated, 46 were classified as social recovery, 19 as greatly improved, 50 improved, and 23 unimproved, a total of 115, or 83.3 per cent, deriving benefit from the treatment. 16.7 per cent were not benefited.

Table four represents a tabulation of treated, paroled, and relapsed patients grouped in order of duration of illness. Twenty of 27 or 74 per cent of the treated patients ill less than one year were paroled from the hospital. One is on parole less than 6 months, 9 are on parole from 6 months to one year, and 6 are on parole 1 to 2 years. Of the twenty paroled, 4 or 20 per cent relapsed and were returned to the hospital, 2 within 6 months after their parole, the others after having been on parole from 6 to 12 months. In the group ill from one to three years, 35 of 64, or 54.6 per cent, were paroled. 14 are on parole for less than 6 months, 4 are on parole from 6 months to one year, 3 are on parole from 1 to 2 years, and one is on parole over 2 years. Of the 35 paroled, 13, or 37 per cent relapsed and were returned to the hospital, 6 within 6 months after parole, 3 after having been on parole from 6 months to one year, and 4 after parole which varied between 1 year and 18 months.

In the group ill over 3 years, 13 of 47, or 27.6 per cent, were paroled. One is on parole less than 6 months, 2 are on parole from 6 months to one year, 5 are on parole from one to two years, and one is on parole over 2 years. Of the 13 paroled, 4 or 32.5 per cent relapsed, 3 within 6 months after parole and one after a one year parole.

Totals: 68 of 138, or 48.5 per cent, of the patients treated were paroled from the hospital—of these 16 are on parole less than 6 months, 15 are on parole 6 months to one year, 14 are on parole 1 to 2 years, and 2 are on parole over 2 years. 21 of the 68 paroled, or 30.8 per cent, relapsed and were returned to the hospital, 11 within 6 months after parole, 6 after a parole of 6 months to 1 year, and 4 after they had been on parole from one year to 18 months.

Since these figures were compiled, an additional 17 patients were treated. 12 of the 17, or 70.5 per cent, were paroled. This alters the total number treated to 155. 80 of the 155, or 51.6 per cent, were paroled.

CONTROL GROUP

Duration of Illness	*Number*	*Paroled*	*Relapsed*
Under 1 yr.	63	20 — 31.7%	7 — 35%
1 to 3 yrs.	43	5 — 11.6%	2 — 40%
Over 3 yrs.	13	0	0
Totals	119	25 — 21 %	9 — 36%

Average duration of Psychoses—1 yr., 5 mos.

In the control group, 20 of 63, or 31.7 per cent, of the patients ill less than one year were paroled. 7 of the 20 paroled, or 35 per cent, relapsed and were returned to the hospital. 5 of 43, or 11.6 per cent, of the patients ill from one to three years were paroled. 2 of the 5 paroled, or 40 per cent, relapsed and were returned to the hospital. In the group ill over 3 years there were 13 patients, none of whom were paroled.

Of the total of 119, 25 or 21 per cent, were paroled and 9 of the 25 or 36 per cent relapsed and were returned to the hospital.

Of the treated patients on parole, all have either maintained their improvement or have continued to improve. After 1 year, 5 patients paroled as markedly improved have been reclassified as social recoveries. One paroled as improved is considered greatly improved and two paroled as improved are now classified as social recoveries.

Environmental conflicts, particularly in unfavorable home situations, proved to be the precipitating factors for the recurrent psychotic episode in the majority of treated cases, whose duration of parole was less than 6 months. These relapses were largely anticipated, but due to the insistence of relatives to have patients return to the unwholesome environment, and the impossibility of more suitable placement, there remained no choice of action. In certain instances parole was considered advisable because of the possibility of recurrence of psychoses as a result of continued unwarranted hospitalization.

The impression gained from re-treating patients who relapse is that the prognosis for recovery is not as favorable as it was originally, and that the tendency to remain well diminishes with each attack. There was also noted a shortening of the intervals between attacks.

In studying the unsuccessfully treated patients, particularly those deriving no benefit from the treatment, the question immediate-

ly arises, are these patients in any way different from those who have recovered. In attempting to answer this question, a comparison was made of the failures in the first two groups, i.e., those ill less than 1 year and those ill from 1 to 3 years, with the recovered patients from the same two groups.

The study of type of psychosis revealed that the catatonic reaction type responded most favorably to treatment and that the majority of the failures had been classified as either hebephrenic type or mixed with hebephrenic features. None of the recovered patients had been so diagnosed.

In studying the symptomatology of psychoses, it was found that all paranoid patients with grandiose delusions failed to improve sufficiently to leave the hospital. An evaluation of such factors as age, sex, heredity, marital status, education, and intelligence showed no significant preponderance in either group. Relatively well adjusted prepsychotic personalities were noted more frequently in the recovered group. The majority of these patients were more fully developed emotionally and in most cases there were definite precipitating factors at the time of onset. There appears to be some correlation of the emotional attitude of the patient toward treatment and the therapeutic results. It was observed that patients recovered or greatly improved displayed a definite attitude toward treatment, more frequently than those improved or unimproved. The most frequently noted attitudes of patients recovered or greatly improved were apprehension, resistance to treatment, and active cooperation. In the patients improved and unimproved, the most frequently observed attitudes were ones of apathy and submission.

That there are more significant differences between the recovered and unimproved patients cannot be questioned; at the present time, however, these have not been made apparent.

Studies of the nature and severity of childhood traumatizing experiences and of the character of precipitating factors and the possible interrelationship with the nature of the mental illness may reveal significant differences which should prove to be of prognostic value in selecting patients for treatment.

Since there is no consistent relationship between the therapeutic results on one hand, and on the other hand, the number of comas and the severity of other reactions, it is logical to assume that, in addition to the pharmaco-dynamic effect of the insulin, there must be other influences at work.

It is generally agreed that the insulin shock therapy is not specific and that its chief merit lies in rendering the patient more accessible and more receptive for the common hospital therapeutic agents, such as reassurance, occupational and recreational therapy, resocialization, and other modified forms of psychotherapy. It would appear that the ability of the physician and the medical personnel to establish good rapport with the patient plays a considerable role in the outcome of treatment. Some of the unsatisfactory therapeutic results are attributed to the inability to wisely utilize this psychotherapeutic principle.

The insulin shock treatment, in addition to sharing with the metrazol and deep narcoses treatments the psychotherapeutic principle of plunging the patient into unconsciousness and then bringing him to consciousness again, shares in certain cases with the deep narcosis treatment, the therapeutic principle described as release therapy. Its occurrence has been observed most frequently in the pre-comatose state or on emergence from coma. There is in evidence at these times a release of the inhibitory and repressive mechanisms with resultant discharge of material which is repressed, although in an abnormal manner when the patient is awake and fully conscious. Several cases studied verbalized conflictive material; this verbalization was accompanied by a discharge of associated affect—e.g., intense rage, hate, or sorrow. This process of abreaction was noted as occurring more frequently in patients who recovered than in those who failed to derive benefit from the treatment; consequently its occurrence has been evaluated as having some therapeutic value.

Conclusions

Insulin shock therapy is of definite value in the treatment of schizophrenia as evidenced by the results obtained in the treatment of 155 patients—51.6 per cent of whom recovered or improved sufficiently to be paroled, as compared with a parole note of

21 per cent in an untreated control group.

Its efficacy is increased when employed in the treatment of selected patients. It was found to be more effective in patients who were relatively well adjusted prior to their illness and whose duration of psychoses was less than one year.

Schizophrenia, catatonic reaction type, responded most favorably to treatment. The Hebephrenic type of Schizophrenia had the most unfavorable prognosis.

Paranoid Schizophrenics with grandiose delusions fail to improve sufficiently to leave the hospital.

There appears to be some correlation of the attitude of the patient toward treatment and the therapeutic results.

The occurrence of abreaction in patients undergoing treatment is considered to be of therapeutic value.

Eloise Hospital.

The Neuroses and Marital Maladjustment

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There is no type of patient more familiar to the practicing physician than the one whose complaints are numerous and in whom the objective findings are very few. Physicians frequently feel that such patients are exaggerating. As rapidly as one set of symptoms clears up another set appears. The patient becomes a nuisance, is finally thought of as a neurotic, and the doctor in want of a rest himself gets it by ordering one for the patient. An extended vacation, such as a trip to another part of the country or a boat trip, is often recommended. There is good reason for this kind of prescription. The physician has listened to a set of symptoms suggestive of some well known syndrome, but examination brings out no objective findings to confirm this suggestion. As the examination proceeds more symptoms appear and the whole picture is distorted. There is no other conclusion he can reach except that there is no organic disease present. Besides this, however, he has become annoyed because the patient has led him along a path toward a definite diagnosis only to suddenly dart in another direction. The physician's reaction to this situation is understandably determined by his emotions. His intelligence and professional training often do not help him and there develops a misunderstanding of the nature of the illness. As a result of this, any one of the following situations may develop.

First, the patient may be treated for a condition which does not exist and the symptoms and belief in his own diagnosis become more fixed in his mind. As an explanatory note, let us realize that gastric or cardiac symptoms resulting from emotional disturbances may be very much like those produced by organic disease.

Second, the patient may be told that there is nothing the matter with him, which, of course, is not true. There might be no demonstrable organic disease, but something is wrong or the patient would not suffer so much. A "nervous" headache might hurt as much as a brain tumor headache and be much more difficult to influence. The patient who is dismissed with the statement that there is nothing the matter with him often unconsciously develops additional symptoms to demonstrate conclusively that he is ill. Or, he may become resentful and go to another physician, or even in some cases to a cultist or self-styled "healer".

Third, the patient may be told that all his symptoms are imaginary, and that his illness therefore is "all in his head". If psychiatric

treatment is recommended it is usually in such deregatory terms as: "If you keep this up you'll go nuts." "Pull yourself together, you don't want to have mental treatments, do you?" "If you don't snap out of this, I'll have to send you to a nerve specialist." Any admonition of this type is always delivered with the same intonation that a kindly judge would use when he is forced to sentence a convicted criminal to prison.

Fourth, the patient may be scolded as if he were still a child and told that he should be ashamed of himself. Sometimes this results in an apparent cure, but it is not long before the patient presents himself again with a different set of symptoms.

Fifth, the physician may know that emotional factors are largely responsible and try to straighten these out, or get the help of some one who is especially interested in such cases, or especially equipped to care for them. A psychiatrist, or a neuropsychiatrist might be such a person.

There are doubtless innumerable reasons for the above reactions on the part of the physician, but I shall confine myself in this paper to just one, the importance of which cannot be over-estimated. I refer to Virchow's Cellular Pathology, the influence of which probably gave greater impetus to the progress of medicine than any other conception. Virchow taught that all diseases are diseases of organs or cells. Even the part of the organ affected is to be determined histologically as for example, Glomerular Nephritis. Every disease has its pathology and when no pathology can be demonstrated, the disorder is necessarily functional. This conclusion is usually derived by a process of elimination which can be very simply stated. If no organic pathology is demonstrable then naturally the disorder is functional. Soon functional came to mean imaginary or faked. Much of the time which used to be spent with patients helping them over their difficulties was now spent in the laboratory. Treatment was more or less limited to those cases with demonstrable pathology, the other cases got a nerve tonic. Many organic conditions are functional in the beginning, and the same treatment would be useful in both. Indigestion caused by a stomach ulcer is not easily distinguished from indigestion caused by an emotional upset. A brain tumor headache may depend upon the same kind of circulatory disturbance as a headache produced by worry.

At the time of Virchow, psychiatry was for the most part institutional. Pathology was sought for in the brain, but was found in only about one-half of the cases. The very worst cases (Dementia Precox) did not exhibit the expected brain pathology, and the trouble was sought elsewhere in the body. Foci of infection were blamed for all sorts of nervous and mental ills and many other disorders without demonstrable pathology. Teeth, tonsils, and even colons in countless numbers were removed. Psychiatry had to have its pathology and in the search for it there came about a regression in the science and a blotting out of the art of psycho-therapeutics. A reaction to this state of affairs set in when the psychiatrist in the institution began to wonder what his patient was like before he became ill. He tried to trace his patient's life back to the time when he was well or normal. In doing this he ran across people, with apparently the same conflicts as his patients, who had not become psychotic, but who suffered from some of the neuroses.

A neurosis cannot be defined in a few words, but it does represent an inadequate response on the part of the patient to the same conflicts which are found in the psychotic and in the normal. A neurosis involves the patient's thinking and emotions, tied up with a response or disturbance in function of the autonomic nervous system. Then we are dealing with something which has come about because of the patient's thinking, and we must attack it through the thinking. This attack is psychotherapeutic. It requires a highly developed scientific technique and consummate art, as delicate and well organized as that used in the most difficult surgical operation. This the physician must realize, if he would deal successfully with his patient. He cannot help him if he does not appreciate this. He must show his understanding by recognizing the fact that the patient is sick not in mind or body, not in an organ or parts of one, but all over. He is sick really as a human being, as a unit in society. Failure to recognize the fact that these people are sick is very common. We have gotten too far away from what happens to the whole person in our absorption with what happens to his organs. On the other hand, we have

an exaggerated idea of what the individual can do in the matter of controlling his feelings and emotions.

The responsibility for this state of affairs rests with the psychiatrist as well as with the surgeon, internist, or philosopher. The psychology of the patient was not substantial enough to deserve the same consideration as organic pathology. The patient was considered as a static phenomenon and mental mechanisms got little attention. When they did get attention they helped toward the conception of psychogenic or functional, which put the burden on the patient. The more we learn about the effect of emotions the more likely we are to feel that the patient's reactions are an inevitable result of his entire past.

It has been my privilege to examine and interview a number of patients in the dispensary who had been in several other departments and who came to our clinic with the diagnosis of gastric neurosis, cardiac neurosis, "chronic invalid," and so on. These patients with neurotic symptoms seemed to suffer as much as those whose symptoms had an organic basis, and as can be guessed from the different diagnoses, the symptomotology was varied. None of these cases complained directly of any disturbance of sexual function, though we know that psychosexual impotence and anaesthesia are common neurotic symptoms which cause a great deal of suffering. It is not within the scope of this paper to consider all the mechanisms involved in these symptoms, but I feel the terms should be defined.

By psychosexual impotence we mean inability on the part of the male to carry out successful intercourse with the marital partner. Such men are often quite potent in other situations. Anaesthesia covers painful or unpleasurable intercourse with the marital partner. Though a woman might enjoy relations elsewhere and even have an orgasm she is considered frigid if the marital relations are completely unsatisfactory. The neurotic patient referred to our clinic is encouraged to talk freely, and practically a new case history is obtained with emphasis on the emotional adjustment. The following cases will, I hope, demonstrate some of the above points as well as the ramifications of the maladjustments. Each case calls for individual study and the choice of the type of management depends upon the response of the patient to the various methods used by the physician.

Case I

John D., aged 39, complained chiefly of pain in the left side, bowel disturbance, excessive gas and diarrhea, palpitation of the heart, and feeling of impending death. The patient had been treated by a number of physicians during the past six years, and from these he derived the following information: First, that he had high blood pressure and was in danger of having a stroke, and second, that there was absolutely nothing the matter with him except his imagination. His wife was "sold" on the idea that he was neglecting his job, and that he was using his illness to evade his responsibilities in the home, such as training and disciplining the children, or such typically masculine chores as fixing the furnace. Because of his evidently irresistible desire to discuss every minute detail of his daily life and the amount of time consumed in so doing, his most recent physician very properly recommended psychiatric care. As indicated before a new case history was written, with special emphasis on the factors bearing on social adjustment. Though the patient is only thirty-nine years old he appears to be over fifty.

In 1933 following some inconsequential disagreements with his business partner, he sold out his share of the business and established himself in the same line of business as a salesman on the road. In this move he says he "practically lost his shirt." He would begin a trip on the road as a salesman and though he happened to be 150 miles from home with business in the same neighborhood the next day, he would drive home, using as a pretext for himself that he could not bear to be alone, could not stand being shut up in a movie, and in addition would become anxious and fearful that he might die suddenly and alone. At other times he would decide it was ridiculous to drive home and usually would consult a doctor. Every one had accepted his idea of the etiology which was a heart attack following an argument with his partner.

He was encouraged to talk about events preceding this business difficulty, and it developed that he and his partner were accus-

tomed to attend every convention in their business. Whenever there were stag parties, the girl entertainers would give his partner a lot of attention but tease him about being too fat, slyly hinting that he would be no good as a sexual partner. The feeling of inferiority, or being "no good" grew on him, particularly in comparison with his partner, so that he finally could not tolerate the familiar business and social contact with him. Furthermore, he reasoned, if he were away from home on business, perhaps his wife would not realize how "no good" he was. When she accused him of infidelity because he made no sexual advances to her, he fell back on his health as an excuse. To secure all of these pertinent factors took time, but as the story unfolded he began to take a little interest in the home, planned and executed week-end picnics with the family, and made welcome and effectual advances to his wife without feeling that his health suffered. His blood pressure began to come down and he appeared younger. In January he was in danger of losing his job because his sales record was so poor, but in June he topped all other salesmen in the company. Loose bowel movements still occur at intervals and he occasionally has palpitation, but he finds now that this does not frighten him. His blood pressure which was at one time 240/120 is now 160/90.

I feel that whatever result we have gotten here came about slowly and can be definitely attributed to the emotional release the patient obtained by discussing frankly, and partially understanding his difficulties. In addition, there were several interviews with his wife to help her to understand the situation and change her attitude from critical disapproval to emphasis on his good qualities. This helped him rebuild confidence in himself.

Case II

This was a nine-year-old boy referred from Pediatrics because of innumerable inexplainable fears, and an attitude that every one was against him. A thorough study in pediatrics had revealed nothing wrong with him physically. He had come to the children's department on account of "feeling sick" and having abdominal pains so severe that he had to be kept out of school repeatedly. He was a pale, babyish boy, accompanied by his mother who answered most of our questions for him without giving him an opportunity to answer for himself. He is an only child. The parents were married ten years ago, and following the birth of this child the mother claimed the doctor told her that she should not have any more children because he had a hard time pulling her through that pregnancy. She thereupon took the baby to bed with her and excluded her husband. She explains her continued over-protection of the child on the basis of "He's all I've got." She complains that the father tends to be mean to both the boy and her.

She is a woman five feet eight inches tall, weighs 165 pounds, and gives the impression of robust health. Since the birth of this boy she has had one repair operation, one abdominal operation for appendicitis and an ovarian cyst, and two operations for adhesions. She thinks that she will have to be operated on again because of frequency of urination and "bladder trouble." She complains that her husband pays no attention to her except to pick on her, and that he also picks on the boy. She says her husband asserts that the man must be boss, but that the only way he asserts his manhood is by "bossyness," without realizing that this is the only resource she has left him. She has asked him why sexual relations should not occur and he insists that such doings are slow suicide. He proclaims that he is as strong as a bull, does the work of two men, never had a sick day, and he sees no reason why he should endanger his health to satisfy her. It was arranged to have him bring the boy in, but to date it has been impossible to have any satisfactory interview with him. He insists that he is all right, and his wife causes all the trouble by paying too much attention to the boy. The mother continues to come in for interviews, and is less an invalid than before. I admit, however, that we shall have to wait until the husband suffers enough to want help before we get any further. The mother admits no pleasure in sexual relations, but her ego is hurt because her husband ignores her. She, therefore, gets attention by being an invalid. The husband covers up his sexual impotency by making himself important in the home and making claims to great physical strength and hardness.

The boy has shown improvement but

strangely (sic) enough when the school reports that he is better the mother finds excuses for breaking his appointments with the psychiatrist. Perhaps she prefers the situation as she knows it to one where the child would no longer stand between her and her husband. Among the other symptoms, this case shows psychosexual impotence and anesthesia on the part of the parents and the unfortunate effects on the child who has many neurotic symptoms.

Case III

A woman of thirty-three, mother of three children, was referred to us from the medical clinic. Exhaustive studies have failed to reveal any factual basis for her numerous complaints, which center around a pain in the region of her heart. This pain she insists is continuous, but some times very much worse as it becomes sharp instead of continuous. When the pain increases, there is pounding of her heart and shortness of breath, coldness of hands and feet, and as a result she is afraid she is going to "pass out."

After relating her symptoms she wanted her husband, who was separated from her and living in another city, to be informed that she was "deathly sick" and insisted that we tell the judge of the Children's Court that she had to have financial and material help in caring for her children. She constantly threatened the husband with placing the children in an orphanage. It would seem that she wanted the physician to act more as a policeman to keep her husband in line than as a doctor.

She was accompanied to the clinic by her mother. Neurotic patients, more often than any others come accompanied. The mother wanted to know why she had so much pain if, as the doctors said, she had no organic heart trouble. When it was suggested to the mother that it might be another kind of heart trouble such as "sweetheart" trouble, she knowingly nodded her head and said, "sure and your conscience can hurt in queer places."

This patient's trouble began after the birth of her third child. She wanted no more children and knowing no other solution felt that continence was the only way to handle this problem. The husband would not agree to this. Their life became one continual quarrel. The patient nagged, the husband left town, and the invalidism developed. Once the patient was seen in an "attack." She seemed more pleased than anything else at this occurrence and responded quickly to water made cloudy by the addition of a few drops of Aromatic Spirits of Ammonia.

Case IV

M. B., female, age 30, was married six and a half years. It's difficult to describe just what her chief complaint was because she complained about everything. The one that she repeated most frequently and insistently was excessive fatigue. There had been a number of physical examinations and no one had been able to find any actual cause for her numerous complaints. In addition to fatigue, she complained of a terrific backache and described how her eyes bothered her—dizziness and vision blurred resulting from the slightest use of the eyes.

After she returned home she was fearful that she might not have told me all of her difficulties, so she wrote me a letter. The letter was one of eight large and closely written pages. It reached the office the second day after the examination, and told how completely exhausted she had been by the trip. She complained of being too tired to sleep that night and so utterly exhausted that she could not move the next day, yet the letter was beautifully written. I also received a letter shortly thereafter which contains a long list of complaints against her husband, and her alibis for not cohabiting with him. These alibis clearly show her anesthesia according to the above definition.

While she was still in college she was advised by a physician to marry. She describes how her room-mate became the mistress of a professional man and suggested to us that her own marriage was a little hasty in order to avoid the same fate. She is rather an attractive looking woman and claims that she always got more attention from men than she wished or needed. If this were really true we should have difficulty in understanding the fact that she was being treated by at least one physician, an osteopath, and a chiropractor, all at the same time.

This case is complicated by the fact that the patient has an insurance policy which pays $30.00 a month during total disability.

She feels, therefore, that it is necessary to convince her physicians that she is so ill that she is totally disabled. When we last heard from her she had moved to a suburb of New York City, and I thereupon referred her to the New York State Psychiatric Institute. Since that time I have not heard from her.

Case V

In 1933 I was asked to see E. H., the wife of H. H., a woman twenty-seven years old, who had been married four years and complained of nervous indigestion. In studying her there were many examinations, the findings of which were normal. These examinations included blood count, blood chemistry, urinalysis, and roentgenology of the gastrointestinal tract.

She was accompnaied to our clinic by her husband. The neurological examination was negative, and the psychiatric examination revealed very little except that the patient was timid, fearful, shy, and seemed to have a very low threshold for pain. She was asked to return and on subsequent visits it was brought out that although she had been married four years, the marriage had never been consummated. The patient was afraid of being hurt, and the husband of hurting her. Neither consciously desired children, and the fear of pregnancy was added to the other fears. The husband, therefore, had intercourse not per vaginum but between the thighs. Many interviews were necessary to straighten out this patient's thinking, and help this couple to a more normal sexual adjustment. We were gratified to hear from them two years ago when the wife wrote us that they had made a perfectly satisfactory adjustment, that her husband was working, and they had moved into a small home of their own. Later there was an announcement that the family had been increased by one.

Case VI

E. S., male, age 30, was seen after he had been at the clinic for treatment for a year, part of the time under the care of a colleague now dead. He came originally worrying about his heart, and fearful that he had a disease of the lungs. However, after this he had what he called a nervous breakdown, definitely characterized by fears. He seemed to be most particularly afraid of the city's main street. To get across this street he would continue up the next one to a point five or six blocks removed from the busy center and cross there. Therefore, to carry out errands on opposite corners necessitated his walking more than a mile to get to a point one hundred feet from the first.

He had been married about three years and considered his marital adjustment very poor. We held a number of joint interviews with the patient and his wife. He had been on relief since his so-called breakdown. He then secured a job on the WPA, and after three months he obtained his present position in private employment, which he has held for over two years. His job takes him all over the city of Syracuse and into surrounding towns, but we hear no more about his fears.

When last seen, he reported that he and his wife had made a very good adjustment. During the period of his so-called breakdown he complained that sexual activity tired him excessively, and that he could not see any use in it because he would be no good physically for days if he gave in to his desires.

We see a few cases which come in with the chief complaint one of marital maladjustment. But I have been trying to consider those who come in originally with many somatic complaints which, in some cases at least, are found to be associated with marital maladjustments, and which clear up more or less completely with psychotherapy. In these cases the marital maladjustment is a definite neurotic symptom and has to be treated as one of the factors that sometimes can be changed. Slight changes in adjustment make for big differences in the patient's complaints.

Conclusions

In closing may I remind you that these patients and similar ones exist in countless numbers, and (1) They consulted a doctor because they felt sick. (2) To tell them that there is nothing wrong with them would be both cruel and untrue. (3) Their sickness was not of an organ or a part, but of the whole individual. (4) To scold them or to laugh at them would only drive them to seek help from a variety of sources, from the druggist on the corner to the witch doctor. (5) Better

than any medicine or suggestion, patience and understanding helps them to help themselves. By applying these sovereign remedies, Patience and Understanding, we uphold the best traditions of the medical profession.

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A Possible Role of the Element of Fear in Metrazol Therapy

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Dr. Samuel N. Clark graduated from the University of Illinois Medical College in 1909. He was Physician at the Kankakee State Hospital, Kankakee, Illinois, from 1910 to 1913. He was Physician at the State Psychopathic Institute, Kankakee and Chicago, Illinois, from 1913 to 1917; Psychiatrist at the Institute for Juvenile Research, Chicago, Illinois, from 1917 to 1918; and Psychiatrist at the State Psychopathic Institute from 1919 to 1920. He has been Associate Physician at the Norbury Sanatorium, Jacksonville, Illinois, from 1921 to date. Dr. Clark was an instructor in Neurology, Rush Medical College from 1914 to 1917. He was Assistant in Medicine, Department of Neurology and Psychiatry, University of Illinois College of Medicine 1918 to 1920. He received Certification in Neurology and Psychiatry in 1941.

Metrazol therapy occupies a prominent place in the therapeutic armamentarium of neuropsychiatry. The number of cases treated by this method now runs into the thousands. An abundant literature on all phases is available. Various explanations have been advanced as to the mechanism which brings about remissions in many cases and apparent recovery in some. Whatever the real mechanism may be, all are agreed that a profound disturbance in physiological function and cerebral activity occurs. Singer[1] makes the point of an alteration in the autonomic functions of the individual as a whole in many psychotic states and in recovery therefrom. Gellhorn[2] refers to physiological studies supporting this contention.

When we first read descriptions of the metrazol treatment we were impressed by the chain of events not only in the convulsive but in the preconvulsive stage. Then as we saw demonstrations on patients as well as motion pictures of them our interest in this phase increased. While we were giving metrazol to patients in the sanatorium during the past three years we have paid particular attention to the preconvulsive period.

Physiological and biochemical observations have been made by competent observers during this stage as well as during the convulsion and afterwards. One thing that has impressed us from the clinical standpoint is the fleeting but quite definite and almost animal like expression of fear that appears just before the first tonic convulsive tightening of the body. We were struck by it in the earlier motion picture views and in demonstrations before we attempted the procedure. Our attention perhaps has been focused on it during our own application of this treatment. Nevertheless it is almost haunting in character and stays with the observer throughout the attack and afterwards. Particularly it is noted in fine featured young patients, both male and female. Fanciful as it may seem and perhaps out of place in objective study, it seems as though one is carried back in time and sees in many of today fear appearing at a lower biologic level. One does not see this expression often at the onset of convulsions due to other causes.

We believe that there is a difference between the dread that patients have of the treatments and this which we term "lower level fear." This need not convey the idea that we have here two distinct reactions, but rather that both are features of one reaction which involves much more than those features of which the subject is clearly conscious. This is merely to say that the individual reacts as a whole. When that is stated we all realize that we are not conscious of all elements in our reactions.

We do not believe the person is conscious

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of the fear at the time the peculiar facial expression occurs. The period of amnesia following metrazol convulsions varies with different people. We have discussed the fear element with them in the course of psychotherapy between and after treatments as well as asking them before a treatment to try and remember their sensations before losing consciousness. Attempts at recall usually bring the same type of answer noted in the literature. At no time have we secured an answer that appears to us compatible with the absolute panic expression to which we have referred. Furthermore, we have not observed this when the patient does not have the grand mal type of attack. Our experience is in accord with the generally expressed opinion that a series of grand mal attacks is necessary for clinical results.

The anxiety and fear reactions during metrazol therapy have recently been reported by Cohen[3] who used the procedure of injecting a cubic centimeter at a time. This device spreads out the time of development of the attack. He endeavored to avoid a major seizure. He found that the period of anxiety and fear could thus be extended in some patients up to three hours. He concludes that "fear" in the sense that he described it is not the active factor in metrazol therapy. Our idea of "fear" in this respect is one which is of deeper origin than the conscious fear he described. It might be reconciled with the statement of Katzenelbogen et al[4] who described a patient who after injection counted to 35 but recalled only counting to 15. Somewhere in that period between counting from 15 to 35 this patient may have experienced the sensation that we have seen pictured in facial expression.

Lipschutz et al,[5] speak of the influence of fear in treatment by insulin and metrazol. They refer to the influence on the psyche and tell how the change may be utilized in resocialization.

Burlingame,[6] in a recent paper raised the question as to the influence of various procedures changing the physiological relationships within the central nervous system on the attitude towards the psychogenic origin of certain mental disorders. We believe that an answer may be found which is consistent with the psychogenic origin when one uses observations mentioned above and considers fundamental biologic mechanisms with them.

There are fears and fears. This is not the place to discuss the psychologic interpretation of this feeling except to suggest that it is a part of a response to a procedure which is an assault on the instinct of self-preservation. Schilder[7] believes the aura and convulsion produced by metrazol constitute a fundamental threat of annihilation and death. The sea sick person may be afraid he won't die. The individual seriously ill with another condition may or may not respond to his fear of death in accordance with the lines,

"The devil sick, the devil a monk would be,
The devil well, the devil a monk was he."

The response and the maintenance of the response depends upon the duration of the illness and upon the personality of the patient. On the other hand, a patient likewise seriously ill with a mental disorder which produces disturbances of thought and action suddenly and in the course of a few seconds after the injection of metrazol receives a terrific assault upon his entire economy including consciousness and his instinct of self-preservation. He almost dies but does not. For all practical purposes from the standpoint of active consciousness he is dead for the matter of a minute or so in the average attack. He goes through a terrifying experience of which he is aware in active consciousness or in a subconscious state for only a short time. During this time at either conscious or subconscious level he goes through a "fear of impending death" that is probably more real than that of the angina patient for whom this phase was coined. Whereas the angina patient who recovers does not lose consciousness, the recipient of metrazol who has a grand mal attack goes on to loss of consciousness and typical convulsive movements. He probably experiences at least the sensation of impending death as shown by facial expression, if that may be considered a criterion, and of a "lower level fear."

We venture to suggest a psychological as well as biological interpretation—that this "lower level fear" may be a factor in a momentary subconscious phase which helps the patient reject an abnormal mental mechanism. Schilder[7] suggests that there is a feeling of relief following a metrazol convulsion which sets free the patient's psychic energy

and results in a loss of importance of previous fixations of libido. There may be a similarity between the development through the subconscious of these abnormal mental mechanisms as an escape from life situations and the rejection of them when an apparent fundamental necessity for living makes it better to reject than to retain. We do not of course know how this is done. We do not know how the subconscious works; yet, we see its effects in many other ways. We wonder if this may not be still another manifestation of it.

Despite the understanding we have of psychologic matters there seems to be a widespread tendency among many of us to think of all conscious reactions as merely conscious ones. It may be added that we may separate psychologic from biologic activities instead of remembering that the former are merely a part of the latter.

When the term fear is used in the foregoing, it is, of course, appreciated that it is a part of a reaction and not the whole of it. A question which must be considered is whether there can be a reaction without such conscious realization of the situation presented, and of the consequences of various reactions, as we commonly think of as present. To make the application concrete is there justification for the surmise that a patient may recover from a mental disorder because a return to sanity presents less difficulty than an existence that is punctuated by a convulsion produced two or three times a week? Furthermore, can this choice be made without his being aware of the fact?

We think of illustrations of choice of attitude and reaction where the subject does not seem to be aware of the significance of his behavior although he would know it if it pertained to some one else. The tendency to defend the actions of members of one's family, or the rejection of factual evidence that religious, political or other views are not sound, comes to mind. A somewhat different situation is presented by the senile dement who seeming not to be aware of the anti-social characteristics of his behavior, yet, does not in many instances act so openly that detection is at once inevitable.

The lower animals frequently show evidence of evading the consequences of situations including those which are dependent upon the behavior. Many of these reactions have to do with instinctive patterns of behavior, but some are deviations of habits established by training.

There are many ordinary reactions in which the individual may or may not be conscious of motives, as well as of the more immediate aspects of the situation. He may on the other hand realize the immediate aspects of the situation and not be aware of his motives. There is not a clean cut dividing line between consciousness and unconsciousness. Added to the more or less conscious elements in a reaction are reflex and vegetative accompaniments all of which serve in a purposive attempt to meet the situation presented. The problem of the part played by consciousness in reactions is too large to be considered here except to the extent that we may call attention to the fact that we are not always fully aware of our motives or feelings. It seems justifiable to say this might be true particularly in such situations as are a threat to the continued existence of the individual. The characteristics of the expression of fear noted in the subjects of metrazol injections suggest that the individual experiences the shock as a threat to life even if he is not fully conscious of making a judgment to that effect.

The statements offered in the foregoing cannot be presented as anything more than a point of view. That it is worthy of consideration seems justified if one thinks of the individual and his reactions as something more than mere consciousness, that is, of the organism as a whole in a psychobiologic sense.

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The Pathogenesis, Diagnosis and Management of Infectious Chorea*

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Since Sydenham, in 1686, first described acute chorea, its etiology and pathogenesis have not been determined. Also, until recent years there has been no effectual therapy. It is our purpose to summarize the present knowledge of the disease, including a near-specific treatment of this serious and distressing affliction.

Acute chorea or St. Vitus dance is an infectious disease characterized by coarse involuntary muscular jerkings and mental irritability, complicated in a high percentage of cases by rheumatic heart disease.

Etiology and Pathogenesis: Chorea attacks children and young adults, more commonly girls than boys, in a ratio of 2½ to 1. It is more frequently seen among poorer classes in cities. There is a seasonal tendency in that most cases occur in the early spring and fall months. Precipitating factors in some cases seem to be emotional shock, fright, pregnancy, and acute infection. A specific bacterium has not been proved to exist. Most experimenters have attempted to prove a streptococcus as the cause. Some animals inoculated with organisms isolated from choreic patients have shown manifestations suggestive of rheumatic disease, but many observers have been unable to confirm these findings. Clean-cut proof of the streptococcus or virus etiology is still lacking.

The pathology of the disease is likewise in dispute. Since the disease is seldom fatal in the acute stages, neuropathologic studies are infrequent. Hughlings Jackson (1869) elaborated an embolic theory to explain the neurologic symptoms. He suggested that cardiac vegetations produced emboli which lodged in the arterioles of the corpus striatum. Bastian[1] believed that multiple minute thrombi occurred in the basal ganglia because of anemia and disturbed nutrition of these centers. At present, neuropathologists describe the lesions as meningo-encephalitic with areas of congestion, hemorrhage, and thrombi in the brain and meninges. Small nodules appear around the vessels of the grey matter of the cortex and the basal ganglia. Freeman[2] stresses, however, absence of the exudative and destructive changes seen in epidemic encephalitis.

Symptoms and Findings—The typical clinical picture of chorea is a fairly rapid development of involuntary, jerky, incoordinate movements. The movements, usually bilateral, are at first slight; the child appears only restless or fidgety, awkwardly dropping things; but they progress to wide arhythmical excursions with facial grimace and dysarthria. The movements usually cease during sleep unless they are very severe. Emotional instability and changes in personality are invariably present. Usually the child is hypersensitive and irritable. At times psychotic manifestations, deliria, and mania are present. Mild systemic symptoms, low grade fever, anorexia, fatigue, headache, constipation, vomiting, and anemia are present. Upon examination, close observation of the child is often sufficient to make the diagnosis. The characteristic movements are easily demonstrated. The incoordination is seen upon attempting any complex movements, e.g. buttoning clothes, walking, reaching for objects, or performing two separate movements such as protruding the tongue and extending the arms. Upon extending the hands, the wrists

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are flexed and fingers extended, the thumbs dipped and forearm pronated.

Hysterical tics or habit spasms are at times confused with true choreic movements. Often tics are diagnosed erroneously as chorea and many children with habit spasms are treated for infectious chorea. But careful observation and the patient's history easily exclude the functional disorder from chorea.

Systemic lesions of rheumatic fever, joint and cardiac disease, and focal infection of the nasopharynx frequently occur. Rheumatic heart disease occurs in a high percentage of cases.[3] Various observers have reported that in 25 to 60 per cent of patients, followed for some years after the disease, rheumatic heart disease has developed. In our 17 cases, 6, or 35 per cent, had physical signs of rheumatic heart disease. This high incidence is the principal reason why chorea is a very serious childhood disease. It is also the reason why early specific treatment is necessary in order to prevent serious cardiac sequelae.

There are no laboratory procedures for diagnosis of the disease. Many patients show a mild secondary anemia. The most valuable test is the sedimentation time.[4] A rapid sedimentation time indicates rheumatic activity— heart disease, foci of infection, or joint involvement. If the erythrocyte settling time is increased it should be checked repeatedly and treatment continued until the rate is normal. In our series a third of the patients showed fast sedimentation rates. In all of these children cardiac pathology or foci of infection were found to account for the rheumatic complications.

Infectious chorea is a self-limited disease running a course of from one to six months, with recurrences of more than one attack in a large percentage of cases. The criteria of effective therapy are: (1) whether the duration of the disease is shortened and (2) whether rheumatic heart disease is prevented.

Treatment of Acute Chorea—Many treatments have been advocated for this disease. Numerous drugs have been lauded from time to time as a specific, such as arsenic, but none have stood the test of time. The best that can be said for drug therapy is that it may give some symptomatic relief. Arsenic probably aided certain cases in counteracting anemia. Salicylates, though relieving painful rheumatic joints, have no value in influencing favorably the course of the disease and may be dangerous by depressing temperatures. Sedative drugs do not favorably influence the movements and are seldom indicated. Cold sheet packs are recommended, but are difficult to give except by experienced nurses. They probably aid because the blankets applied hold body heat, thus producing mild artificial fever. The pack also acts as a temporary restraint to the movements. Choreic children should not be treated in the home. They are best managed in a hospital away from disturbing home factors. Complete rest in bed is one of the most important principles of therapy.

The nearest approach to specific therapy was introduced by Sutton and Dodge (1931), namely fever therapy by intravenous typhoid vaccine injection. They showed that the course of the disease was shortened and the incidence of heart disease and polyarthritis was lessened.[5]

Vaccine therapy has definite disadvantages —the shock reaction with chill and fever, the uncertainty of the temperature elevation, and the debilitating effect of treatment—all are objections to its use.

In our experience and that of many others[6] the safest, most efficient method of artificial fever induction is by means of the air conditioned, thermostatically controlled hypertherm cabinet. The exact amount of fever desired can be prescribed and treatments given daily without depleting the patient. Daily treatments for 2 hours of 105 to 106 degrees F. are given. In our 17 cases the average number of treatments necessary for a cure was about 8. Only 5 patients required more than 25 hours of fever therapy (See Table I). Cases not responding to fever therapy should be carefully checked for sedimentation rate increase and active focal infection. At times, therapy should be stopped and the foci of infection eradicated, after which, a few fever treatments will abolish the remaining choreic movements. Rheumatic heart disease is no contraindication to fever therapy. In fact, its presence should cause one to immediately prescribe fever therapy to prevent progression.

A high caloric nutritious diet and vitamin therapy as indicated should be maintained during treatment. Complete rest away from unnecessary family visiting, preferably in the

TABLE I

Results obtained in 17 cases of chorea by fever therapy (104-106 degrees F.)

Case	*Age*	*Duration*	*Severity*	*Treatment* No.Hrs.	*Above 104°*	*Results*
1. D. S.	10	2 weeks	moderate	10	37	1st attack; prompt recovery —heart lesion—improved.
D. S.	12	1 week	moderate	6	15	2nd attack; prompt recovery.
2. B. J.	9	1 week	moderate	6	15	Prompt recovery.
3. J. L.	12	3 months	severe	16	31	Delayed recovery.
4. K. C.	11	4 months	severe	8	16	Prompt recovery.
5. H. W.	11	2 months	severe	22	45	Delayed recovery — cardiac murmur disappeared.
6. O. B.	11	1 month	moderate	9	27	Prompt recovery.
7. C. T.	12	2 weeks	mild	5	15	Prompt recovery.
8. M. L.	9	2 months	severe	7	14	Delayed recovery—chorea relieved after T. & A.
9. L. S.	12	1 month	severe	11	22	Prompt recovery.
10. A. E.	22	1 month	severe	4	8	Prompt recovery—complicat- by hypomania & pregnancy.
11. C. S.	18	2 weeks	moderate	4	7	Prompt recovery.
12. D. M.	11	1 year	severe	12	29	Delayed recovery.
13. V. L.	18	2 weeks	moderate	5	15	Prompt recovery.
14. E. B.	17	1 week	moderate	4	7½	Prompt recovery.
15. V. C.	18	3½ months	moderate	10	20	Prompt recovery.
16. N. M.	11	10 days	severe	11	22	Delayed recovery.
17. A. B.	10	2 weeks	moderate	13	26	Delayed recovery.
Total:						
17 11-F		8 weeks	8-severe	*Av. Rx.*	*Av. Hrs.*	12-prompt recoveries within
6-M			8-moderate	8.8	20	2-3 weeks.
			1-mild		*above 104°*	6-delayed recoveries.
						1-recurrence.

hospital until fever therapy is completed, aids in speedier recoveries. Many of our cases, however, because of economic reasons, are treated as out-patients, returning to their homes for bed rest between fever sessions.

Comment

Eight patients had previous attacks of chorea prior to fever treatment. Six had cardiac lesions; seven had rheumatic symptoms other than chorea; one patient treated by fever had a second attack. Seven cases had rapid sedimentation rates with physical signs of rheumatic joints, foci of infection or cardiac lesions. Two cases with delayed recovery were benefited by removal of foci of infection.

The average number of treatments for recovery was 8.8 or 20 hours of fever above 104° F. Only five patients required more than 25 hours. Six cases obtained a prompt recovery with six treatments or less. Patients responded best who were constantly in the hospital with treatments daily or every other day. The delayed recoveries occurred in out-patients, often treated at irregular intervals. The large majority of cases respond in 2 to 3 weeks with 8 to 12 treatments.

Summary

1) Acute infectious chorea is a major manifestation of rheumatic fever. A high percentage of cases have rheumatic cardiac disease; 35 per cent of our 17 cases showed evidence of heart lesions.

2) The etiology and pathogenesis are still undetermined. The diagnosis is made by clinical methods. Increased blood sedimentation rates show that complications are present and indicate rheumatic activity. The disease should be treated until the blood settling time becomes normal.

3) Artificial fever therapy is a near-specific. Fever therapy shortens the attacks of chorea, relapses become less frequent, and complications, especially heart disease, are lessened. At times, eradication of foci of infection are indicated before complete relief is obtained. Rheumatic heart disease is not a contraindication to fever therapy.

4) All drug therapy is of doubtful value in this disease.

5) In 17 cases excellent prompt response was obtained by fever therapy. Recovery followed an average of 8.8 fever sessions or 20 hours of artificial fever above 104 degrees F.

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Sterilization

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Dr. M. I. Brown was graduated from the University of Texas Medical School in 1928. He served interneships at John Sealy, Scott and White, and Santa Fe Hospitals. He then entered private practice in the Bowie Clinic and Hospital at Bowie, Texas, and he served as city health officer during 1929-1930. Following a short period of private practice at Mineral Wells, Texas, he entered the service of the State as Assistant Physician at the Austin State Hospital in 1931 and he transferred to the Austin State School in 1932 in the same capacity. From 1937 he served as Assistant Superintendent and was appointed Superintendent in May of 1939 which position he holds at present. Dr. Brown is a member of the State Neurological Association, and the American Association on Mental Deficiency. He has written papers for the State Neurological Association on two previous occasions on the subject of "Treatment of General Paresis with Diathermy" and also had a paper published in the National Journal of Occupational Therapy on the subject of "Occupational Therapy with the Mentally Deficient."

This paper is not intended to enlighten you on the subject of sterilization. It is, rather, my intention to reawaken an interest in the subject for the purpose of having such legislation passed as may relieve an economic and biological condition which is increasing by leaps and bounds. The writer has very little first-hand knowledge of the results of sterilization, but being on the staff of a State School for Feebleminded has studied the subject from the standpoint of his experience with patients in that institution; and from the literature dealing with the results obtained by those who have had extensive experience with the practice of sterilizing selected mental cases. The paper then, of course, deals with mental defective patients primarily, although the subject as offered may be applied to the other types of mental conditions as well.

At the outset it might be well to state that mass sterilization of inmates of institutions is not contemplated by this writer, nor by any student of the subject. Furthermore, although a broad program of sterilization would probably begin to show biological results in a century—and such a program should be ultimately arrived at—we are trying at this time to consider the subject primarily from an economic standpoint. A sterilization program should be very cautiously and conservatively approached; it can grow with our experience, to the ultimate good of all concerned.

We have, in the Austin State School, approximately 1900 patients with about 400 applications on file. More applications are coming in every day, and although we have no absolute basis for such a statement, surely there are several times as many mental defectives outside the institution as there are in it. Several surveys have been made from time to time as to the causes of the inmates'

mental condition; we find that approximately 85 per cent of these children give a history of familial tendency to mental disease or deficiency. There is also an additional group of about 5 per cent in which the condition may also be hereditary.

We do not have very many instances of several members of a family being in the institution; yet many of the histories indicate that there are other members of an inmate's family who are mentally unfit. However, a very significant point is the fact that our histories indicate that most of the families producing a feebleminded child are large, averaging between four and five individuals per family. (It might be stated that this figure agrees with that of other students of the subject). It has been stated that the average family of middle and higher brackets produces less than an average of two children. Truly, civilization is breeding from the bottom.

Under the existing conditions, that is, with no sterilization legislation, we feel that one of the primary purposes of the School for Mental Defectives is to remove these individuals from society; to prevent their propagating. We have experimented very cautiously with paroling some of the higher grade patients to outside care, very carefully selecting those who had good records in the institution from a behavior standpoint, and who were capable of at least partial self-support. There is no well-developed social agency for observation of these individuals, and we are considerably hampered in this activity by the fear that some of the patients may beget children. It might be pertinent to state that the paroling of these individuals has been done only with the approval and recommendation of the County Judge who committed the patient. Parole without sterilization is done in a few of the Northeastern states which have highly developed probation systems. We believe we could feel secure in paroling many of our inmates if we were permitted to sterilize them before trying them in normal society.

Among our inmates there are 16.5 per cent morons (I. Q. 50-70); 6.3 per cent borderline cases (I. Q. 70-80) and dull normals (I. Q. 80-90); and 1.1 per cent normals (I. Q. 90+). (These figures are arrived at, of course, strictly on a mental level basis without considering the personality of the individuals). This means that there are approximately 23.9 per cent of our patients who could be paroled and become largely self-supporting, and with only periodic observation by a parole officer, if sterilized. When this percentage is applied to the number of patients directly or indirectly under our observation (3000) we have an approximate 700 patients who are unnecessarily maintained by the State in custodial care. Thus a considerable financial saving could be returned to the State's coffers. (Our last financial statement indicates that our per capita cost is $235 per year, although this figure does not include additions and betterments in the form of new buildings, etc.).

There is another group of cases which have been sterilized in some states. This comprises the mentally low-grade but physically fully-developed girls who "like men" and whose parents wish to care for them at home. Some of the states temporarily institutionalize these patients, sterilize them and return them to home care. This is a humane procedure and relieves the anxiety of the parents or guardians, relieves the State of a financial burden, and foregoes the possibility of procreation by a feeble-minded individual.

So much for what may be considered the immediate economic attitude toward the subject. We should also be concerned with the biological or eugenic side, to the purpose of building for posterity. Of course, sterilization of all mental patients in the country would not stop mental disease; the seed has been spread too widely. The effects of such a program would probably not begin to show inside a century from a strictly eugenic point of view. However, the adoption of a conservative law applying to the known defectives would have its ultimate effect, and could be broadened as public attention and opinion warranted and allowed. The results of recent legislation in Nebraska and South Dakota will be interesting to observe in this regard.

In South Dakota there has been established a State Commission for Feebleminded, operating through the country officials, to register and classify such defectives. These defectives "become wards of the State, and shall be segregated to the end that they shall not reproduce their kind." The statute provides that defectives may not marry until it can be shown that one of the parties seeking the marriage has been sterilized. The

Nebraska law is quite similar. It would be necessary to extend the law to other types of mental disease also, however, in order to control mental deficiency, as many defectives are born of psychopathic parents.

Most of the arguments against sterilization are made from what we prefer to call the personal attitude. Let us take up some of these and try to disprove them by what is reported in the literature:

First, that sterilization might deprive the country of some brilliant individuals. History discloses no instances of outstanding statesmen, scientists, or other brilliant minds arising from tainted heredity. True, many of our country's great men came from lowly surroundings, but not from tainted stock. Their ancestry showed pioneers and independent people who fought privation and hardship to open new lands.

Abram Myerson and other observers of mental patients reported: "No instances of genius or high-grade talent in families of such patients." We have also the classical Kallikak and Jukes family histories with which we are all familiar, producing generation after pyramiding generation of mental and social misfits.

Second, that sterilization would encourage sexual promiscuity. The feebleminded or psychopathic patient more often than not lacks judgment and foresight and does not consider the possible consequences of sexual experience. The records of the California institutions for feebleminded (as reported by the Human Betterment Foundation) indicate that of 423 feebleminded girls committed to California institutions, 75 per cent were sex-offenders; after sterilization and parole, only 8 per cent of this same group were sex-offenders. This was due to training, physical betterment while in the institution, of course, and not due to any change resulting from the operation. This certainly does not indicate any increase in immorality after sterilization.

One author (E. A. Whitney—*Eugenic Sterilization)* has reported improvement in the sexual habits of both boys and girls in the Pennsylvania State School after having been sterilized (vasectomized and salpingectomized). The groups reported were small and there is no other literature on that subject. It is certainly interesting from our standpoint.

It is also interesting to note that in California the paroled sterilized patients are sometimes allowed to marry at the discretion of the Superintendent of the school for mental defectives. The report (Human Betterment Foundation) states that 59 per cent of these marriages were happy; that 10 per cent were doubtful; and further states that this compares favorably with the general marriage level of California, one-third of which ended in divorce.

Another argument offered against sterilization is the possibility of abuse of such legislation. This also involves, of course, the further question as to who shall be authorized to select the patients for sterilization; also where and by whom the work shall be done. Our personal feeling is that this whole question can be very safely left in the hands of physicians; and more particularly the superintendents of the institutions. We, as physicians, are more familiar with the problems of the mental defectives and are better qualified to pass upon their possibilities. Even were a non-medical body established, such a body would of necessity rely upon the physicians' or psychiatrists' judgment in the final analysis. Our code of ethics, of course, foregoes the possibility of willfull abuse of the privilege of sterilizing mental patients. Most States with sterilization laws leave the matter in the hands of the superintendents, and the head of the eleemosynary division. The operations are comparatively simple and non-hazardous and can be readily performed by any member of the staff who is performing abdominal surgery.

The operations contemplated, of course, are vasectomies in the male and salpingectomies in the female. The former is so very simple and non-hazardous that only two or three hospital days are required, and the operative scar is barely preceptible after several months. Salpingectomy, of course, involves an abdominal operation, but is no more hazardous than a non-complicated appendectomy, requiring ten to fourteen days hospitalization. One operator has ingeniously used a transverse skin incision which conforms to the suprapubic fold, leaving little or no visible scar.

The only alleged abuse of the sterilization procedure in a State Institution was that reported in the newspapers during the past

year in a middle western state. The operations were allegedly done on the authority of a non-medical superintendent of a girls' corrective institution. The charges of abuse were brought by a former superintendent of the institution, and, so far as known, were subsequently dropped.

The general public is gradually becoming aroused on this question of sterilization. We, at the Austin State School, are being called upon not infrequently to discuss the matter by men and women alike, by parents and others. Many parents whose children are in our care have requested the operation on their children, and, surprisingly, most of these requests come from the mothers.

Sterilization of those deemed mentally unfit for procreation should be considered as part of a program for improving the health and general welfare of the people. It should be considered as coming within the scope of preventive medicine and public health. Twenty-nine states of the forty-eight have now adopted measures for sterilizing the mentally unfit. This important legislation should be adopted in the remaining states for the purpose of lessening our social and economic burden, and relieving much unhappiness. We should risk the scant possibility of unfairness to a few individuals in the interest of thousands who will be benefitted by such a program.

Someone has stated that the inferior one-fourth of the present generation is producing three-fourths of the next generation. Society should care for the mentally unfit, but it should also have the power of preventing the procreation of those dependent upon it.

"If the feeble-minded are not treated properly, they will surely have their revenge."

Austin State School.

NOTICE

"The National Committee for Mental Hygiene wishes to enlarge its roster of physicians who have had some psychiatric service and might be available during the emergency to help keep up the work of some mental hospital. Some may be doing things which they consider not especially important; some may have retired. Obviously a person whose physical health makes him incapable of good service would not be available, but age of itself will not be considered very detrimental when medical staffs are short.

"It is requested that all those who see this notice inform the National Committee (1790 Broadway, New York City) of the name and address of any such physician. Many such men have not been actively engaged in psychiatry of late and hence are not members of psychiatric organizations, but their mental hospital experience in former years may have been of very good standard."

National Committee for Mental Hygiene, Inc.
George S. Stevenson, M.D., Medical Director.

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Abstracts

OSTEITIS DEFORMANS ASSOCIATED WITH MENTAL DISEASE**

E. V. SEMRAD; R. C. WADSWORTH; *and* S. HORVATH

Studies were presented on eleven cases of osteitis deformans (Paget's disease) occurring in a mental hospital with a population of 2000. All of the cases had their psychoses before the osteitis deformans was discovered. At the time of admission to a mental hospital, only three out of eleven presented the clinical picture of an organic reaction type of psychosis. Four cases, which on admission showed the clinical picture of a functional psychosis, now reveal an organic reaction type. All of the patients have evidence of arteriosclerotic changes either in the peripheral vessels or in the fundi. All cases show characteristic roentgenological findings. Ten cases show normal blood calcium and phosphorus with elevated phosphotase values. Four out of eight cases have an elevation of the blood magnesium. None of the cases show evidence of increased intracranial pressure. Pathological studies are presented on one case.

CREATININE-CREATINE EXCRETION IN SCHIZOPHRENIA**

W. CORWIN *and* S. M. HORWATH

The reports of some recent investigators (Hobson, 1939; Dill & Horvath, 1941) presented evidence that normal adult men may excrete creatine. Previous conceptions were that creatine was found only in the urine of growing children, occasionally in adult women, in certain pathological conditions and never in the urine of adult men.

Our present ideas on creatine-creatinine excretion are based on Folin's (1904) original work with mental patients. This present study was made on sixteen schizophrenic patients on regular hospital and on meat-free diets. Analyses showed that both male and female patients excreted creatine in their urines on both diets. There also appeared to be a lack of constancy of creatinine excretion, contrary to the usual conceptions.

**Presented at the March 13, 1941 meeting of the Massachusetts Society for Research in Psychiatry, held at Grafton State Hospital, North Grafton, Massachusetts.

(Continued from page 179)

bers of the board, especially the medical examiner, must become aware of this important problem. The Committee on Military Mobilization has assisted the War Department in preparing a circular that affords some information on how to recognize these men. The history of the applicants' backgrounds will tell enough to exclude a large number. Where doubt exists the selectee should be referred to the psychiatrist on the medical advisory board. Certainly more patients should be referred to him for there is an insufficient psychiatrist personnel to place psychiatrists on local boards. New forms for psychiatric examination are contemplated and will be made available to the medical examiner; also proposals are under way to arrange the psychiatric consultation facilities to improve accessibility. These committees are doing an excellent work, and the army, tax-payer, industrial production, and national morale will be benefited from this effort to guide suitable talents into the right channels.

Hamilton Ford, M.D.

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